

A hand holding a green showerhead spraying water onto a field of yellow and purple flowers. The water is captured in mid-air, creating a fine mist. The background is a clear blue sky.

Annual Report On Water Quality

June 2003

Fairfax County Water Authority

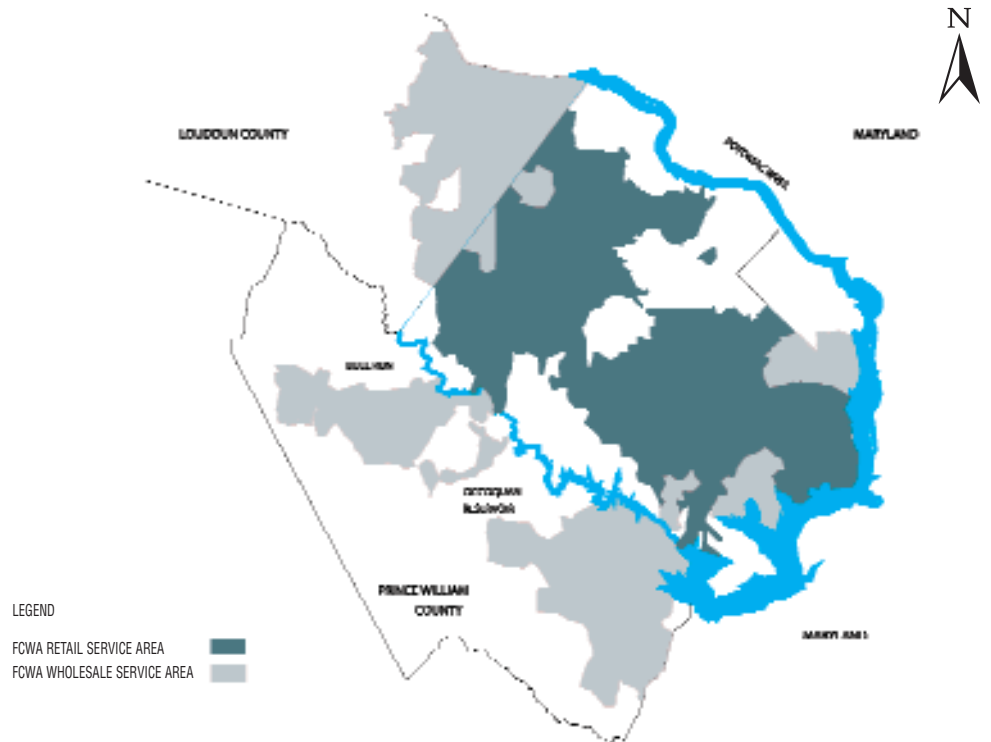
Q. What's the short answer to "how's my water quality?"

A. This report contains a lot of information and data. But the short answer is that of the more than 120 contaminants we test for, we found very few. Those found were in negligible amounts that are well below EPA's maximum contaminant levels. The Water Authority's goal is to continue to deliver the highest quality water possible to our customers. Through the use of the best available technologies in treating drinking water, we believe we do just that!

What's the Source of My Water?

Fairfax County Water Authority draws surface water from two primary sources: the Potomac River and the Occoquan Reservoir fed by the Occoquan River.* Our treatment facilities are located at opposite ends of Fairfax County and feed an interconnected distribution system. The James J. Corbalis, Jr. Treatment Plant, located at the northern tip of our service area, draws water from the Potomac River. The Occoquan Reservoir, on the southern border of Fairfax County, supplies the Occoquan and Lorton treatment plants located near the Town of Occoquan.

FCWA Service Areas



* In 2002 Fairfax County Water Authority purchased small quantities of water from neighboring utilities. These purchases totaled only 0.1% of Fairfax County Water Authority's total water sold in 2002.

Important Information from EPA about...

Drinking Water and People with Weakened Immune Systems

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).



ANNUAL REPORT ON WATER QUALITY

JUNE 2003

T*his Annual Report on Water Quality was produced to inform you about the quality of your drinking water. The goal of the Fairfax County Water Authority is to provide the 1.2 million Northern Virginians who drink our water with a safe, high quality, and dependable supply of drinking water. That's 1.2 million friends, neighbors and family members. We don't need any other reason to demand the highest in water quality standards!*

The quality of your drinking water must meet stringent state and federal requirements administered by the Environmental Protection Agency and administered by the Virginia Department of Health. The Authority tests the water throughout its system for over 120 contaminants. Those that we found are listed on the charts at the center of this report. All of those listed are well below EPA's maximum contaminant levels.

This report was prepared under the requirements of the Safe Drinking Water Act. And, while we know our customers appreciate receiving this information, cost is always a concern. This report was designed, printed, and distributed for less than 12 cents each. If you have questions regarding this report, please call us at (703) 698-5800.

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Q. Why does my water sometimes have a chlorine taste and odor?

A. During the months of April, May and June you may notice the taste and odor of chlorine in your water. That is because, during this time, we use free chlorine instead of the less noticeable combined chlorine (chloramine). Free chlorine provides the best method of disinfection during the water main flushing done each spring to maintain a high level of water quality. Keeping an open container of drinking water in the refrigerator allows the chlorine to dissipate, which usually improves the taste of the water.



Summary Of Finished Water Characteristics

Components	Lorton and J.J. Corbalis Water Treatment Plants							
	Units	MCLG	MCL	Average	Minimum	Maximum	Violation	Major Source in Drinking Water
2, 4-D	ppb	70	70	0.13	ND	0.31	No	Runoff from herbicide used on row crops
Atrazine	ppb	3	3	0.2	ND	0.7	No	Runoff from herbicide used on row crops
Dalapon	ppb	200	200	0.22	ND	1.36	No	Runoff from herbicide used on rights of way
Simazine	ppb	4	4	0.1	ND	0.4	No	Herbicide runoff
Chloroform	ppb	NRL	NRL	30.0	10.7	62.2	No	By-product of drinking water disinfection
Bromodichloromethane	ppb	NRL	NRL	9.3	3.9	12.5	No	By-product of drinking water disinfection
Chlorodibromomethane	ppb	NRL	NRL	2.5	0.8	5.4	No	By-product of drinking water disinfection
Metolachlor	ppb	NRL	NRL	0.1	ND	0.2	No	Runoff from herbicide used on row crops
Total halonitriles ¹	ppb	NRL	NRL	6.12	2.78	13.50	No	By-product of drinking water disinfection
Total ketones ¹	ppb	NRL	NRL	4.12	1.80	8.67	No	By-product of drinking water disinfection
Chloropicrin ¹	ppb	NRL	NRL	1.06	ND	3.04	No	By-product of drinking water disinfection
Chloral Hydrate ¹	ppb	NRL	NRL	5.18	0.87	13.90	No	By-product of drinking water disinfection
Haloacetic acids (5) ¹	ppb	NRL	NRL	42.0	15.8	82.0	No	By-product of drinking water disinfection
Cyanogen chloride ¹	ppb	NRL	NRL	1.57	ND	3.91	No	By-product of drinking water disinfection
Barium	ppm	2	2	0.05	0.03	0.06	No	Discharge of drilling wastes; discharge from metal refineries; erosion from natural deposits
Fluoride	ppm	4	4	0.80	0.50	1.30	No	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Nitrate (as Nitrogen)	ppm	10	10	1.60	ND	4.40	No	Runoff from fertilizer use; leaching from septic tanks,sewage; erosion of natural deposits
Nitrite (as Nitrogen)	ppm	1	1	ND	ND	0.12	No	Runoff from fertilizer use; leaching from septic tanks,sewage; erosion of natural deposits
Beta/pton emitters ^{2,3}	pCi/L	0	50	4.00	1.90	6.80	No	Decay of natural and man-made deposits
Alpha Emitters ⁴	pCi/L	0	15	0.70	0.00	1.80	No	Erosion of natural deposits

Some Terms Defined

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The tables on these pages show the results of our monitoring for the period of January 1, 2002 to December 31, 2002. In the tables and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

Action Level: The concentration of a contaminant that, if exceeded, triggers a treatment or other requirement, which a water system must follow.

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Total Trihalomethanes: A group of organic chemicals that are formed in the water treatment process by the reaction of the disinfectant chlorine with natural organic matter in the source water. Compliance is based on a running annual average.

Total Coliform: A bacteria that indicates other potentially harmful bacteria may be present.

90th Percentile: Represents the highest value found out of 90 percent of the samples taken in a representative group. If the 90th percentile is greater than the Action Level, it will trigger a treatment or other requirement that a water system must follow.

Turbidity: A measure of the clarity of water. Turbidity is measured in Nephelometric Turbidity Units (NTU). Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth.

Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Key to Charts

NRL	No regulatory limit
ppm	Parts per million, corresponds to one penny in \$10,000
ppb	Parts per billion, corresponds to one penny in \$10,000,000
pCi/L	Picocuries per liter
NTU	Nephelometric Turbidity Unit
TT	Treatment technique
ND	Non-detect
N/A	Not Applicable
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfectant Level Goal

- Testing performed in 1998.
- The MCL for the Beta particles is written as 4mrem/year. EPA considers 50 pCi/L to be the level of concern for Beta particles.
- Testing performed in 1999.
- An MCL of 100ppb was in effect until 4th Quarter 2002, at that time the new compliance level of 80ppb was initiated.
- TT = Treatment Technique, Total Organic Carbon has no health effects. However, it provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes and haloacetic acids.
- Quarterly Running Annual Average of the monthly ratio of actual Total Organic Carbon removal versus required Total Organic Carbon removal between source and treated waters. QRAA is to be ≥ 1 to be in compliance.
- Results based on Quarterly Running Annual Average.

Testing of Process Water

Turbidity (NTU)	Total Organic Carbon (ratio)
Turbidity levels are measured during the treatment process after the water has been filtered, but before disinfection. The turbidity level of filtered water shall be less than or equal to 0.5 NTU in at least 95% of the measurements taken each month, and shall at no time exceed 5 NTU.	MCLG N/A MCL TT ¹ Quarterly Running Annual Average ² 1.0 Minimum 0.6 Maximum 1.4 Major Source in Drinking Water Naturally present in the environment Violation No
MCLG TT MCL TT Average Annual Turbidity 0.08 Highest Single Measurement 0.63 Lowest Monthly % Samples Meeting Treatment Technique Turbidity Limit 99.999% Major Source in Drinking Water Soil Runoff Violation No	

Distribution System Water Quality

Microbial Results		Total Chlorine (ppm)		Metals			Total Trihalomethanes ² (ppb)		Haloacetic Acids ² (5) (ppb)	
Total Coliform Bacteria (presence or absence)		MRDLG 4	MRDL 4	Copper Lead			MCLG 0	MCL 100/80 ⁴	MCLG 0	MCL 60
MCLG 0	Presence not to exceed 5% of monthly samples	Highest Quarterly Average 3.4	Minimum 0.9	Action Level 1.3 ppm	FCWA 90th Percentile 0.0639 ppm	15 ppb	Highest Quarterly Running Annual Average 32	Highest Quarterly Running Annual Average 32	Highest Quarterly Running Annual Average 25	Highest Quarterly Running Annual Average 25
MCL 0.00%	FCWA Result 0.00%	Maximum 5.9	Maximum 5.9	Number of sites above 90th Percentile 0	Major Source in Drinking Water Corrosion of household plumbing systems	1	Minimum 6	Minimum 6	Minimum 6	Minimum 6
Major Source in Drinking Water Naturally present in the environment	Major Source in Drinking Water Naturally present in the environment	Major Source in Drinking Water Water additive used to control microbes	Major Source in Drinking Water No	Major Source in Drinking Water Corrosion of household plumbing systems	Major Source in Drinking Water Corrosion of household plumbing systems	Major Source in Drinking Water By-product of drinking water disinfection	Maximum 78	Maximum 78	Maximum 82	Maximum 82
Violation No	Violation No	Violation No	Violation No	Violation No	Violation No	Violation No	Violation No	Violation No	Violation No	Violation No

Q. Is it okay to use water from the hot water tap for drinking, cooking, or making baby formula?

A. No. Hot water generally comes from a hot water heater that may contain impurities that should not be ingested. Some of these impurities might be metals from household plumbing that are concentrated in the heating process. Additionally, these impurities from household plumbing dissolve more rapidly in hot water, causing the amount of impurities to be higher in hot water.

Water Treatment

Water treatment is the process of cleaning water to make it safe for human consumption. When raw water enters the treatment plant, coagulants are added to make small particles adhere to one another, become heavy, and settle in a sedimentation basin. The water is filtered to remove remaining fine particles and treated with chlorine to kill harmful bacteria and viruses. A corrosion inhibitor is added to minimize dissolution of lead used in older household plumbing, and fluoride is added to protect teeth. If odors or unpleasant tastes are present in raw or finished waters, powdered activated carbon and potassium permanganate are added to the treatment process. Ozone is used at our Potomac treatment plant to reduce odors and organic material.

Water Quality Improvements

The Water Authority's goal is to continue to deliver the highest level of water quality possible to our customers. To reach this goal, the Water Authority promotes the use of the best available technologies in treating drinking water.

In December 2000, the Corbalis Water Treatment Plant became the first water treatment plant in Virginia, and one of the few in the nation, to treat its water with ozone—a powerful disinfectant. As a result of ozone treatment, the Corbalis Water Treatment Plant has realized many improvements in its treatment process including an increase in the inactivation of *Cryptosporidium* and *Giardia*, improvements in taste and odor, and reductions in the formation of disinfection-by-products.

The Water Authority is committed to improving our operations and treatment efficiencies. For example, work continues on building a new state-of-the-art water treatment plant in Lorton, Virginia that is scheduled to come into service in 2004. Like the Corbalis facility, it will feature ozone disinfection and biologically active, deep bed, GAC (granular activated carbon) filtration.

Construction of an offshore intake in the Potomac River to replace the present shoreline intake has been completed. This new intake enables the Water Authority to obtain cleaner and safer water for treatment.

Additional Monitoring Requirements

In addition to the over 120 contaminants for which the Water Authority regularly tests, in 2001, we analyzed for even more. The U.S. Environmental Protection Agency requires large water systems to monitor for 12 additional contaminants including herbicides, pesticides and volatile organic contaminants. This one-year requirement is part of the Unregulated Contaminant Monitoring Rule. The Water Authority monitored its treated water for these contaminants and none were found at detectable levels. You can learn more about this rule on EPA's website at <http://www.epa.gov/safewater/ucmr.html>.

Outreach

As part of the Water Authority's community outreach efforts to improve water quality, five grants were awarded to area community groups for projects related to water supply and source water protection. You can learn more about our grants program on the Water Authority's website at <http://www.fcwa.org/outreach/grants.htm>

Opportunities for Public Participation

The Water Authority Board of Directors normally meets the first and third Thursday of each month at 6:30 p.m. in the Board Room of the Water Authority's offices at 8570 Executive Park Avenue, Merrifield, Virginia. Notices of public hearings and other opportunities for public participation are posted on the Water Authority's Web Site at www.fcwa.org.



Source Water Assessment and Protection

Under provisions of the Safe Drinking Water Act, states are required to develop comprehensive Source Water Assessment Programs that identify the watersheds that supply public tap water, provide an inventory of contaminants present in the watershed, and assess susceptibility to contamination in the watershed. Source water assessment for the Water Authority's watersheds were conducted by the Virginia Department of Health. Based on the criteria developed by the state, the Potomac River and the Occoquan Reservoir were determined to be of high susceptibility to contamination. This determination is consistent with the state's finding of other surface waters (rivers, lakes, streams) throughout the Commonwealth of Virginia.

The assessment consists of maps of the watershed area that was evaluated, an inventory of known land use activities, and documentation of any known source water contamination within the last five years. A secure version of the report is available by contacting the Water Authority or by visiting our website.

Testing for Lead

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing.

If you are concerned about potential elevated lead levels in your home's water, simply flush the tap for 30 seconds to two minutes prior to using for cooking or drinking. For information on having a lead level test conducted, call our Customer Service Department at (703) 698-5800. The charge for lead level testing of your home's water is \$35.00 per faucet. Additional information is available from the **Safe Drinking Water Hotline (800-426-4791)**.

Cryptosporidium

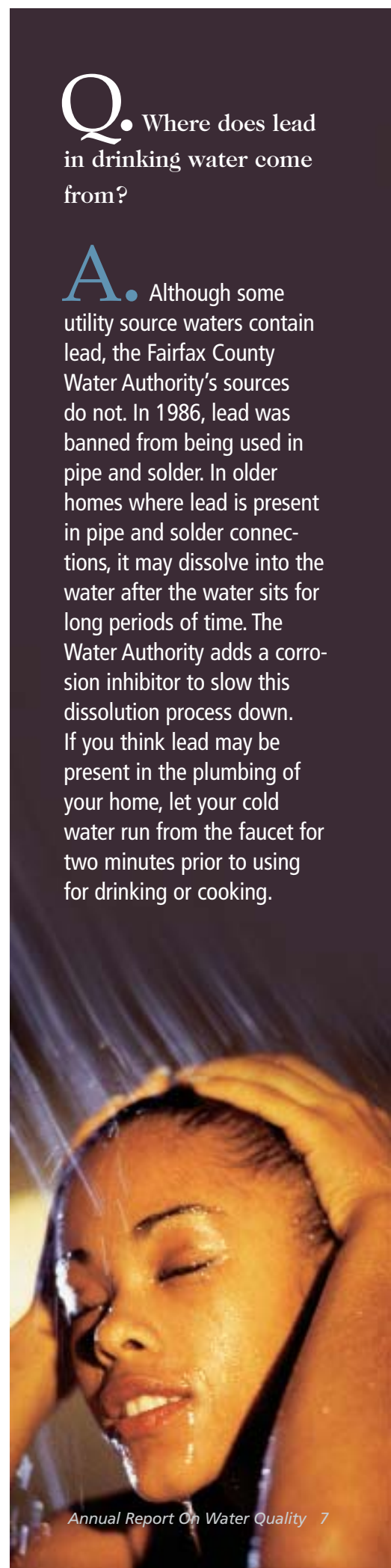
Cryptosporidium is a single-celled organism that lives and reproduces within the intestines of an animal host. During its life cycle it matures into resistant cells called oocysts that can be shed in feces. The disease caused by *cryptosporidium* is called *cryptosporidiosis* and is caused by infection with oocysts.

People can be exposed to oocysts from other people, animals, water, swimming pools, fresh food, soils, and any surface that has not been sanitized after exposure to feces. Symptoms can range from a mild diarrhea to incapacitating diarrhea, cramps, loss of appetite, weight loss, nausea, and low-grade fever.

Currently, accurate methods for detecting cryptosporidium at very low levels are not available. Therefore, EPA does not require testing of treated (finished) water unless concentrations in raw water (before treatment) exceed 10 oocysts per liter (L). All raw water tests performed by the Water Authority have been well below the EPA threshold. In 2002, no cryptosporidium was found in the testing conducted on the raw waters.

Q. Where does lead in drinking water come from?

A. Although some utility source waters contain lead, the Fairfax County Water Authority's sources do not. In 1986, lead was banned from being used in pipe and solder. In older homes where lead is present in pipe and solder connections, it may dissolve into the water after the water sits for long periods of time. The Water Authority adds a corrosion inhibitor to slow this dissolution process down. If you think lead may be present in the plumbing of your home, let your cold water run from the faucet for two minutes prior to using for drinking or cooking.



Important Information from EPA about...continued from page 2

Sources of Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and in some cases radioactive material and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include: (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. (2) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming. (3) Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses. (4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems. (5) Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

Contaminants

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the *Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)*.

Need more information or additional copies of this report?

Contact the Fairfax County Water Authority's Customer Service Department at (703) 698-5800.

Fairfax County Water Authority
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This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

이 보고서에는 귀하가 거주하는 지역의 수질에 관한 중요한 정보가 들어 있습니다. 이것을 번역하거나 충분히 이해하시는 친구와 상의하십시오.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradúzcalo o hable con alguien que lo entienda bien.

Bản báo cáo có ghi những chi tiết quan trọng về phẩm chất nước trong cộng đồng quý vị. Hãy nhờ người thông dịch, hoặc hỏi một người bạn biết rõ về văn để này.